

## CLAIMS

1. A microcapsule comprising a shell and a core enclosed in the shell, wherein the core comprises a phase-change material and a nucleating agent for the phase-change material, and wherein the diameter of the core is from about 0.1  $\mu\text{m}$  to about 1,000  $\mu\text{m}$ .  
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2. The microcapsule of Claim 1, wherein the diameter is from about 0.1  $\mu\text{m}$  to about 300  $\mu\text{m}$ .
3. The microcapsule of Claim 1, wherein the diameter is from about 0.1  $\mu\text{m}$  to about 100  $\mu\text{m}$ .
- 10 4. The microcapsule of Claim 1, wherein the phase-change material is selected from the group consisting of n-octacosane, n-heptacosane, n-hexacosane, n-pentacosane, n-tetracosane, n-tricosane, n-docosane, n-heneicosane, n-eicosane, n-nonadecane, n-octadecane, n-heptadecane, n-hexadecane, n-pentadecane, n-tetradecane, n-tridecane and a mixture of one or more of the foregoing.
- 15 5. The microcapsule of Claim 1, wherein the phase-change material is selected from the group consisting of 1-octacosanol, 1-heptacosanol, 1-hexacosanol, 1-pentacosanol, 1-tetracosanol, 1-tricosanol, 1-docosanol, 1-heneicosanol, 1-eicosanol, 1-nonadecanol, 1-octadecanol, 1-heptadecanol, 1-hexadecanol, 1-pentadecanol, 1-tetradecanol, and 1-tridecanol, and a mixture of one or more of the foregoing.
- 20 6. The microcapsule of Claim 1, wherein the phase-change material has a fewer number of carbon atoms than the nucleating agent.
7. The microcapsule of Claim 1, wherein the nucleating agent is from about 0.1 % to about 15 % with respect to the weight of the phase-change material.
8. The microcapsule of Claim 1, wherein the core solidifies at a  
25 temperature higher than the melting point thereof.
9. The microcapsule of Claim 1, wherein the shell comprises a polymeric material.
10. The microcapsule of Claim 1, wherein the phase-change material is a paraffin hydrocarbon with from about 13 to about 28 carbon atoms.
- 30 11. A composition comprising a plurality of the microcapsules of Claim 1

and another material.

12. The composition of Claim 10, wherein the microcapsules form a discrete phase in a continuous phase of the other material.

5 13. The composition of Claim 10, wherein the plurality of the microcapsules comprise the same core.

14. The composition of Claim 10, wherein the plurality of the microcapsules comprise two or more different compositions of the core.

15. The composition of Claim 10, wherein the microcapsules are in an amount from about 50 % to about 95 % of the total weight of the composition.

10 16. The composition of Claim 10, wherein the microcapsules are in an amount from about 55 % to about 90 % of the total weight of the composition.

17. The composition of Claim 10, wherein the microcapsules are in an amount from about 65 % to about 80 % of the total weight of the composition.

15 18. The composition of Claim 10, wherein the composition is in a form of a fabric.

19. The composition of Claim 10, wherein the composition is used as a flooring material.